

WHAT IS CLAIMED IS:

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1. A filter circuit for use with a bit pump having a transmit and receive path, comprising:

a noise prediction equalizer configured to generate a noise prediction equalizer coefficient during activation of said bit pump to reduce an intersymbol interference associated with a receive signal propagating along said receive path; and

a decision feedback equalizer configured to generate a decision feedback equalizer coefficient during said activation of said bit pump to reduce said intersymbol interference associated with said receive signal, said noise prediction equalizer adapted to be concatenated with said decision feedback equalizer during showtime of said bit pump to form a precoder associated with said transmit path.

2. The filter circuit as recited in Claim 1 wherein said noise prediction equalizer and said decision feedback equalizer are couplable to a feed forward equalizer during said activation of said bit pump.

3. The filter circuit as recited in Claim 1 wherein said
noise prediction equalizer and said decision feedback equalizer are
couplable to a slicer during said activation of said bit pump.

4. The filter circuit as recited in Claim 1 wherein each of
said noise prediction equalizer and said decision feedback
equalizer comprise delay lines associated therewith.

5. The filter circuit as recited in Claim 1 wherein said
noise prediction equalizer and said decision feedback equalizer
comprise noise prediction equalizer and decision feedback equalizer
coefficient arrays respectively associated therewith.

6. The filter circuit as recited in Claim 1 wherein said
precoder is a Tomlinson-Harashima precoder.

7. The filter circuit as recited in Claim 1 wherein said
precoder comprises a plurality of taps.

8. A method of configuring a filter circuit for use with a
2 bit pump having a transmit and receive path, comprising:

3 generating a noise prediction equalizer coefficient with a
4 noise prediction equalizer during activation of said bit pump to
5 reduce an intersymbol interference associated with a receive signal
6 propagating along said receive path;

7 generating a decision feedback equalizer coefficient with a
8 decision feedback equalizer during said activation of said bit pump
9 to reduce said intersymbol interference associated with said
10 receive signal; and

11 concatenating said noise prediction equalizer with said
12 decision feedback equalizer during showtime of said bit pump to
13 form a precoder associated with said transmit path.

9. The method as recited in Claim 8 further comprising
coupling said noise prediction equalizer and said decision feedback
3 equalizer to a feed forward equalizer during said activation of
4 said bit pump.

10. The method as recited in Claim 8 further comprising
2 coupling said noise prediction equalizer and said decision feedback
3 equalizer to a slicer during said activation of said bit pump.

11. The method as recited in Claim 8 wherein each of said
2 noise prediction equalizer and said decision feedback equalizer
3 comprise delay lines associated therewith.

12. The method as recited in Claim 8 wherein said noise
2 prediction equalizer and said decision feedback equalizer comprise
3 noise prediction equalizer and decision feedback equalizer
4 coefficient arrays respectively associated therewith.

13. The method as recited in Claim 8 wherein said precoder is
2 a Tomlinson-Harashima precoder.

14. The method as recited in Claim 8 wherein said precoder
2 comprises a plurality of taps.

15. A bit pump having a transmit and receive path,
2 comprising:

3 a modulator, coupled to said transmit path, that reduces a
4 noise associated with a transmit signal propagating along said
5 transmit path;

6 an analog-to-digital converter, coupled to said receive path,
7 that converts a receive signal received at said bit pump into a
8 digital format;

9 a decimator, coupled to said analog-to-digital converter, that
10 downsamples said receive signal propagating along said receive
11 path;

12 a filter circuit, including:

13 a noise prediction equalizer that generates a noise
14 prediction equalizer coefficient during activation of said bit
15 pump to reduce an intersymbol interference associated with
16 said receive signal, and

17 a decision feedback equalizer that generates a decision
18 feedback equalizer coefficient during said activation of said
19 bit pump to reduce said intersymbol interference associated
20 with said receive signal, said noise prediction equalizer
21 being concatenated with said decision feedback equalizer
22 during showtime of said bit pump to form a precoder associated
23 with said transmit path; and

24 an echo canceling system, coupled between said transmit and
25 receive path, that attenuates an echo in said receive signal.

16. The bit pump as recited in Claim 15 further comprising a
2 feed forward equalizer coupled to said noise prediction equalizer
3 and said decision feedback equalizer during said activation of said
4 bit pump.

17. The bit pump as recited in Claim 15 further comprising a
2 slicer coupled to said noise prediction equalizer and said decision
3 feedback equalizer during said activation of said bit pump.

18. The bit pump as recited in Claim 15 wherein each of said
2 noise prediction equalizer and said decision feedback equalizer
3 comprise delay lines associated therewith.

19. The bit pump as recited in Claim 15 wherein said noise
2 prediction equalizer and said decision feedback equalizer comprise
3 noise prediction equalizer and decision feedback equalizer
4 coefficient arrays respectively associated therewith.

20. The bit pump as recited in Claim 15 wherein said precoder
2 is a Tomlinson-Harashima precoder.

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21. The bit pump as recited in Claim 15 wherein said precoder
2 comprises a plurality of taps.

21. The bit pump as recited in Claim 15 wherein said precoder
comprises a plurality of taps.

22. A transceiver, comprising:

a framer that formats signals within said transceiver;

a bit pump coupled to said framer and having a transmit and receive path, including:

a modulator, coupled to said transmit path, that reduces a noise associated with a transmit signal propagating along said transmit path;

an analog-to-digital converter, coupled to said receive path, that converts a receive signal received at said bit pump into a digital format;

a decimator, coupled to said analog-to-digital converter, that downsamples said receive signal propagating along said receive path;

a filter circuit, including:

a noise prediction equalizer that generates a noise prediction equalizer coefficient during activation of said bit pump to reduce an intersymbol interference associated with said receive signal, and

a decision feedback equalizer that generates a decision feedback equalizer coefficient during said activation of said bit pump to reduce said intersymbol interference associated with said receive signal, said noise prediction equalizer being concatenated with said

24 decision feedback equalizer during showtime of said bit
25 pump to form a precoder associated with said transmit
26 path; and
27 an echo canceling system, coupled between said transmit
28 and receive path, that attenuates an echo in said receive
29 signal; and
30 a controller that controls an operation of said framer and
31 said bit pump.

23. The transceiver as recited in Claim 22 wherein said bit
24 pump further comprises a feed forward equalizer coupled to said
25 noise prediction equalizer and said decision feedback equalizer
26 during said activation of said bit pump.

24. The transceiver as recited in Claim 22 wherein said bit
25 pump further comprises a slicer coupled to said noise prediction
26 equalizer and said decision feedback equalizer during said
27 activation of said bit pump.

25. The transceiver as recited in Claim 22 wherein each of
26 said noise prediction equalizer and said decision feedback
27 equalizer comprise delay lines associated therewith.

26. The transceiver as recited in Claim 22 wherein said noise
prediction equalizer and said decision feedback equalizer comprise
noise prediction equalizer and decision feedback equalizer
coefficient arrays respectively associated therewith.

27. The transceiver as recited in Claim 22 wherein said
precoder is a Tomlinson-Harashima precoder.

28. The transceiver as recited in Claim 22 wherein said
precoder comprises a plurality of taps.